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The farmer looks ahead

*Four yardsticks
for measuring future farm
production:*



FARMERS' BULLETIN No. 1774
U.S. DEPARTMENT
OF AGRICULTURE

A little while back the agricultural problem with which we had to grapple was foremost an emergency problem. I believe that now we must be taking stock of programs addressed to the longer-time situation.

Now it appears that we may be standing upon the threshold of better times, perhaps of something like a new era. In this era, our permanent policy with respect to agriculture, as I see it, must shape itself to give the farmer his fair share of prosperity, having due regard to the long-time interests of the national community as a whole.

We can no longer have an exploited agriculture because in the long run that means national ruin. Neither can we have a crudely over-subsidized agriculture because in the long run the people will not stand for it. The question is, as we pass from emergency to longer-time considerations, How far shall public policy go in one direction, how far in the other? We are going to need wise counsel and especially a sense of perspective in the times ahead.

HENRY A. WALLACE.

Issued May 1937.

THE FARMER LOOKS AHEAD

Four Yardsticks for Measuring Future Farm Production

Prepared by the *Bureau of Agricultural Economics*¹

HOW much should farmers produce? There are only five words in that question, but it's a big question. In the past each individual farmer answered it for himself, without thought as to what the total answer for all farmers should be. But recent years have taught farmers the necessity of working together. And as they look ahead they are seeking an answer not alone as individuals but also as a group.

There are several ways of reaching an answer—several yardsticks for measuring how much farmers should produce.

Here are four major yardsticks:

1. How much should farmers produce, thinking only of the requirements of domestic consumers, plus

2. What they can expect to ship to foreign countries in the next few years?

3. How much should they produce, thinking only of the requirements of soil conservation?

4. How much should farmers produce, thinking only of their incomes?

The answers will not be the same for all these yardsticks. But before we go into that let's see how much we **can** produce. Let's look at all the farms at one time—at the Nation's farm plant.

What the Farm Plant Can Produce

Any farmer can tell you what he expects his own farm to produce under average conditions. In the Middle West he knows about how many bushels of corn the "west 40" will make; in the South he knows about how much cotton he can get off the east bottom land. Our problem is a bigger one—but the same kind of problem. What can we expect this huge national farm plant to produce under average growing conditions?

A Look at the Record

In order to tell what can be expected in the future, we must look at the past record of production. During the 5 years 1928–32 we had an average of 366.6 million acres of harvested crops, the largest for any 5 years since the World War. Yields were about what we could normally expect with average weather during those years, too, so let's say 1928–32 represents the size of our farm plant.

Since crop production pretty largely determines livestock production and since we have taken 1928–32 for crop production, we can

¹This bulletin is based on results of a study undertaken in connection with the outlook service provided by the Bureau of Agricultural Economics. Assistance was provided by staff members of the Agricultural Adjustment Administration, the Soil Conservation Service, and the Resettlement Administration in collecting and analyzing material for this bulletin.

take 1929-33 as representing the size of our farm plant in livestock production.

There we have a picture of the size of our farm plant. But that's only part of the story. It's true we have to take a base period of years from which to work. But we have no way of forecasting changes in farm efficiency that might throw our calculations off.

Changing Farm Techniques.

New machinery, better seed, better livestock, and better cultural methods are continually increasing farm productivity.

In 1787, the year in which the Constitution was framed, the surplus food produced by 19 farmers fed 1 city person. In recent years 19 farm people have produced enough food for 56 nonfarm people in the United States plus 10 living in foreign countries. One hundred and fifty years ago American agriculture was but little advanced over that of the ancient Egyptians. Today it is a highly specialized, commercialized industry.

Output per farm worker has increased by more than 40 percent in the twentieth century alone.

There is every reason to suppose that marked technological changes will continue to be made in the future. Such changes in efficiency as occur in the next few years will tend to increase the productive power of the farm plant. That's something to think about.

But, in the meantime, let's assume a farm plant of 365 million acres and yields equal to the average yields for the 1928-32 period. Now how many acres do we need from the standpoint of the consumer? Let's look at the yardstick of domestic consumption.

1. The Yardstick of Home Consumption

The human stomach seems remarkably elastic. You can do wonders with it on Thanksgiving or Christmas. But on the average, the amount of foodstuffs consumed per person in the United States has not shown any such change. That's true whether you measure it in pounds or calories.

This regularity in the amount consumed has been caused largely by regularity in total production. Prices have moved up or down with changes in production of food and with changes in buying power of consumers. Large supplies or low buying power have kicked back on farmers in lower prices. This has put on him a large part of the job of filling human stomachs in spite of low income and low prices.

How Much Do We Eat?

Consumption of wheat for human purposes has averaged about the same per person per year in each of the 5-year periods between 1920 and 1935. The quantity of corn used for corn meal, corn flakes, corn starch, corn oil, and corn sugar has also held steady over this period. Only 6 to 8 percent of the corn crop is used for such products, however, the rest being consumed by livestock.

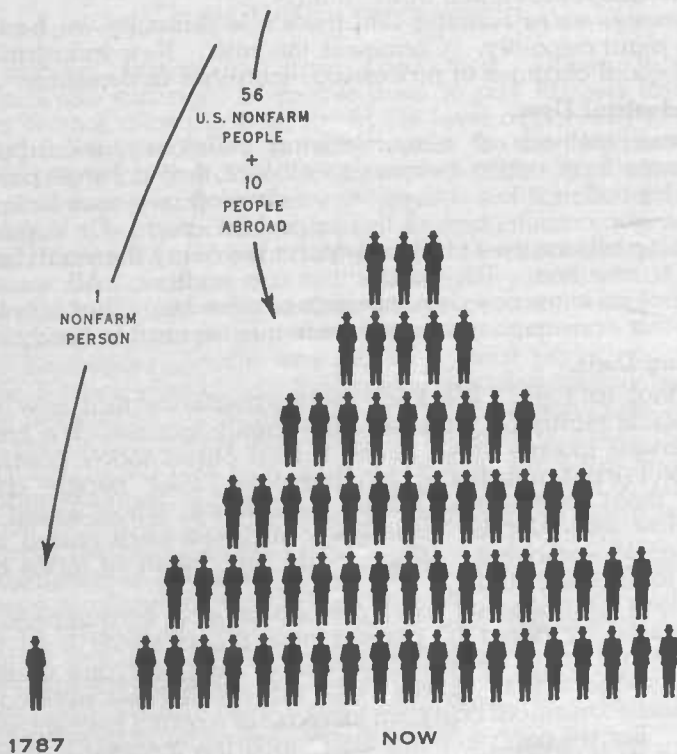
Consumption of potatoes has showed a slight downward trend during the last 15 years. Sugar consumption increased between 1920 and 1930 and then dropped off. We're using about the same amount of rice now as we were 15 years ago. Consumption of dried beans

**SURPLUS FOOD PRODUCED BY 19 FARM PEOPLE
IN 1787 AND IN RECENT YEARS**

19 FARM
PEOPLE



PRODUCED A SURPLUS FOR



has increased. We're also eating more fresh and canned vegetables. Consumption of citrus fruit has jumped up in recent years, but this increase has been partly offset by a decrease in the use of apples. Other fruits have held about steady.

Both milk and eggs are consumed in larger quantities than they were in 1920. We're eating slightly less beef and veal than we did 15 years ago, but we're eating more mutton and lamb. Pork consumption has held about the same during this period.

Altogether, figuring in terms of acreages, these changes in consumption of different foods have about offset each other.

Consumption of our chief fiber crop, cotton, was steady during the 1920's, but declined after 1929 because of the reduction in industrial activity.

Putting all these averages together in terms of acres, we find that the country used the products of about 2.02 acres per person in 1920-25, of 2.05 in 1925-30, and of 1.95 in 1930-35 for food and fiber.

That tells what we have consumed in the past. Can we expect to consume about that much in the future?

Obviously, we're running into the same difficulty we had in estimating plant capacity. Change is the rule. New industrial uses—technological changes in processing—changes in demands.

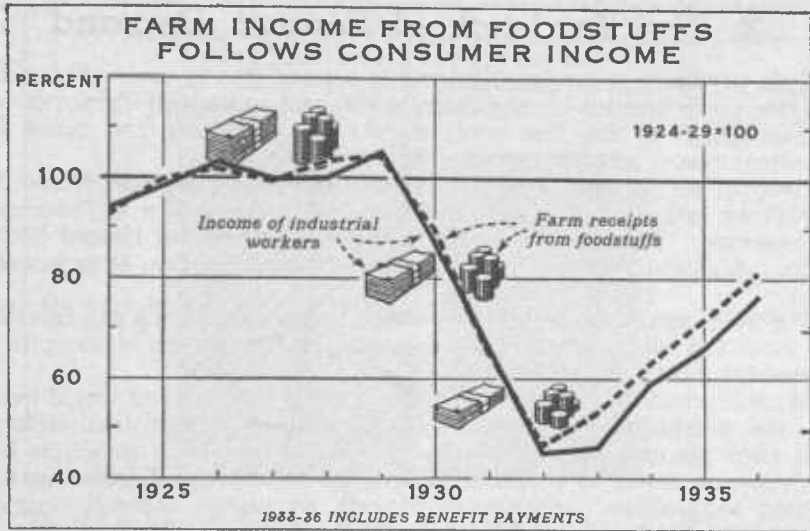
New Industrial Uses.

Suppose methods of manufacturing cellulose into fabric from other crops than cotton become so efficient that a large part of the market for cotton is lost. Suppose we develop new uses for corn that increase our consumption of this important crop. Or suppose that we develop alternatives for corn which take away the small industrial market it now has. The possibilities are endless. All we can say now is that we know new developments are coming. Just how they will change our consumption requirements it is impossible to say.

Changing Diets.

And that isn't all. We know from experience that how well we eat depends mostly on the size of the family income. We know that at the lowest income levels in the United States today purchases of food don't meet nutritional requirements. Poor people don't get enough meat, eggs, milk, butter, vegetables, whole-wheat bread, fruit. Now let's suppose these lower incomes were raised so that people could eat better. What would that mean in terms of acres needed to grow the stuff?

Dietitians estimate that total per-capita food consumption would be increased by about 10 percent over the 1920-29 level if these lower incomes could be raised enough so that everyone would have a fairly adequate diet. If only major diet deficiencies were corrected on the most economical basis, an increase of about 5 percent would be needed. But we can't forecast how much the incomes of the poorer people of the country will increase in the next few years. Of one thing we can be certain: It is to the direct interest of farmers that incomes in these lower income groups be increased by means of larger industrial production, less unemployment, and increased pay rolls. The incomes of farmers can be increased up to a certain point by adjusting production to demand. Further increases must



come through larger industrial production. Unless incomes of consumers are sufficient to enable them to pay farmers fair prices, farmers cannot afford to produce at the level apparently needed for so-called adequate diets. In other words, the farmer alone cannot bear the whole burden of providing an adequate diet for the Nation. For him to try means a loss of farm income that will make him a poorer consumer of city-produced goods and services.

In the absence of a dependable forecast of what changes in industrial demand and changes in diets in the lower income groups will mean in the near future, let's take average consumption for the 1920-29 period as our best estimate of what we can expect in the next few years. Per-capita income was higher in that period than in any previous 10-year period. In that period we used slightly more than 2 acres per person. Our next question is, How many people?

Our population is still increasing at the rate of about 800,000 a year, although the rate has been decreasing since the World War. Population authorities say that the present population of 128 million will have increased to 135 million by 1945 and will average 130 million during the next 5 years.

A population of 130 million will require about 265 million acres of harvested cropland to provide the same amount of food and fiber per person as we had in 1920-29. In addition we'll have to have feed for slightly less than 14 million head of work stock, used in producing for the domestic market. Allowing 2 acres of grain and an acre of hay per head, slightly more than 40 million acres would be needed. That puts the total up to 305 million acres.

To meet these requirements we have a farm plant of about 365 million acres. Thus we have 60 million acres of cropland we apparently don't need for domestic purposes. Our next inquiry will be into the foreign market. Can we hope to sell the products of 60 million acres in foreign markets during the next few years?

2. The Yardstick of Foreign Demand

This yardstick of foreign demand is a hard one to use. You have all the uncertainties of changing diets and industrial demands we talked about in the last section. And in addition you have the uncertainties of international politics.

Several forces are working toward increased foreign trade for American farmers. The most important is the general world recovery in business. The reciprocal trade agreements of the United States help. And the progress toward currency stabilization is a hopeful sign.

But over against these are the many trade restrictions still in effect all over the globe which have hamstrung foreign trade in spite of improving business conditions.

World industrial activity is usually a good indicator of world trade in farm products. But since 1932, though world industrial activity has risen steadily, world demand for American farm products has not risen as much as would ordinarily be expected. Tariffs, quotas, mixing regulations, licensing of imports, exchange controls—almost every important country has thrown up barriers to the free flow of trade.

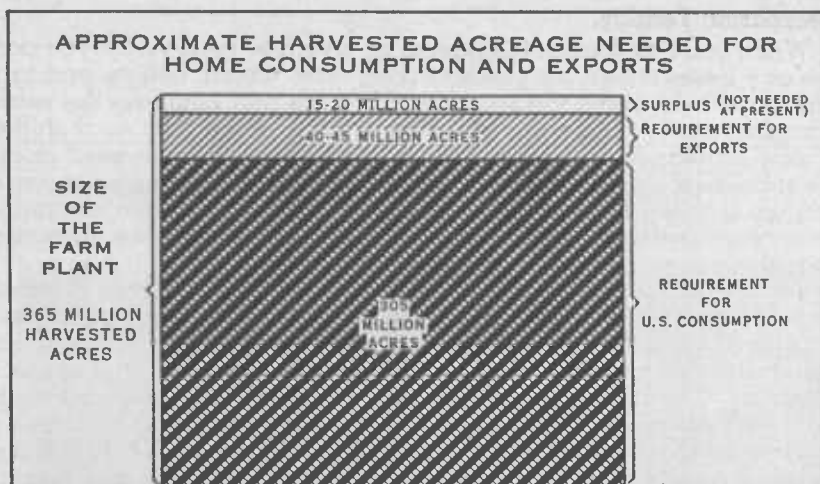
In the case of agricultural products, trade restrictions began even before the depression and were applied with much greater force when the industrial decline came. Behind these trade barriers, agricultural production has been increasing rapidly in countries that formerly imported most of their foods and raw materials. At the same time our own high tariff has made it difficult for foreign countries to pay for our farm products with goods shipped into the United States.

There are now signs that we are beginning to recognize that in order to sell we also have to buy. The reciprocal trade-agreements program has operated not only as a means of increasing trade by reducing trade barriers, but also as a check upon the heretofore general world movement toward further trade restrictions. Agreements have not yet been made with the large European countries who were formerly our best customers but if, in the future, agreements are made with some of these countries, the effect on our farm exports should be more pronounced than in the case of those now in operation.

Slightly Improved Outlook.

World business improvement, the moves toward currency stabilization, and the trade-agreements program all point in the direction of increased foreign trade. Nevertheless we cannot look for great advances in exports. It is extremely doubtful that requirements for the foreign market will exceed those for the 1930-34 period. At present we are exporting at about two-thirds the rate that we exported during those 5 years. In 1930-34 we used about 40 to 45 million acres for export purposes, including feed for work animals used in producing export crops.

Adding this estimate to our estimate of domestic requirements, we get about 345 to 350 million acres. Thus, even making all possible allowance for the foreign market, we still have a farm plant that is 15 or 20 million acres larger than we need in the United States.



So much for yardsticks 1 and 2. We have looked at the problem of future farm production from the standpoint of prospective demand. Now, the question is, what changes in crop acreages are needed from the standpoint of soil conservation and good farm management?

3. The Yardstick of Soil Conservation

Sweeping winds and sloshing water are blowing and washing away the best of the Nation's topsoil. Heavy cropping and undue leaching are sapping the stores of plant nutrients from our great reservoir of fertility. It has taken us a long time to wake up to the fact that our farm land isn't limitless.

Eroded Acres.

Ponder this: In a recent survey of the effects of erosion, the Soil Conservation Service found that more than two-thirds of the land area of the United States (excluding the large cities) has been affected by erosion! About 50 million acres have been rendered permanently unfit for tillage! Another 50 million acres have been seriously damaged by erosion! Another 100 million acres have been impaired by erosion! And erosion is well started on still another 100 million acres!

Damage from erosion is heaviest in the South and West but is also serious in the Corn Belt and the Northeastern States. Sheet erosion (the washing away of whole layers of the topsoil) and gully erosion have affected about half the total area in the South and West. About one-third of the Corn Belt has been so affected. Sheet erosion has damaged about one-fourth of the northeastern area, and gully erosion has affected about one-sixth of this section of the country. Wind erosion is a problem chiefly in the West, North Central and Western States but is of some importance in the South Central States.

Erosion damage is usually easy to see although sheet erosion is sometimes not often obvious to the untrained eye. A drive through the country tells more than many printed pages. But other serious losses of plant food are caused by heavy cropping, grazing, and leaching. They are not so easily seen.

Decreasing Fertility.

When you first look at the figures on average crop yields you don't see any losses either, for yields of corn, oats, wheat, cotton, and tame hay have held about the same for 65 years (not counting the recent drought years). But when you stop to think of the continual shifting to new croplands in those 65 years, the improvement in seed stocks, the increased use of fertilizers, and better cultural methods generally, you see that the fertility of our cultivated land has been declining. Otherwise average crop yields would certainly have increased sharply.

We see that planning farm production is not just a matter of supply and demand. It is also a matter of protecting the farm plant itself.

Several attempts have been made in the last 2 years to estimate the changes in crop acreages needed from the standpoint of soil conservation. Perhaps the most important was one undertaken by farmers themselves in the winter of 1935-36. Farmer committees in almost every county in the country estimated the changes they believed were necessary in order to stop erosion and maintain soil fertility. A similar project in which agricultural experiment station workers did the estimating was carried out in 1935.

Less Corn, Wheat, Cotton.

Both the farmers and the scientists of the experiment stations indicated that acreages of corn, wheat, cotton, and other exploitive crops should be decreased and these soil-depleting crops replaced for the most part by hay and pasture. The farmers thought a reduction of at least 20 million acres in corn, wheat, and cotton was needed. The scientists recommended a somewhat greater reduction.

Experiments conducted by the Soil Conservation Service on demonstration projects scattered throughout the United States bear out the conclusions reached in these two Nation-wide studies. Altogether, a shift of 20 to 30 million acres from soil-depleting to soil-conserving crops seems desirable.

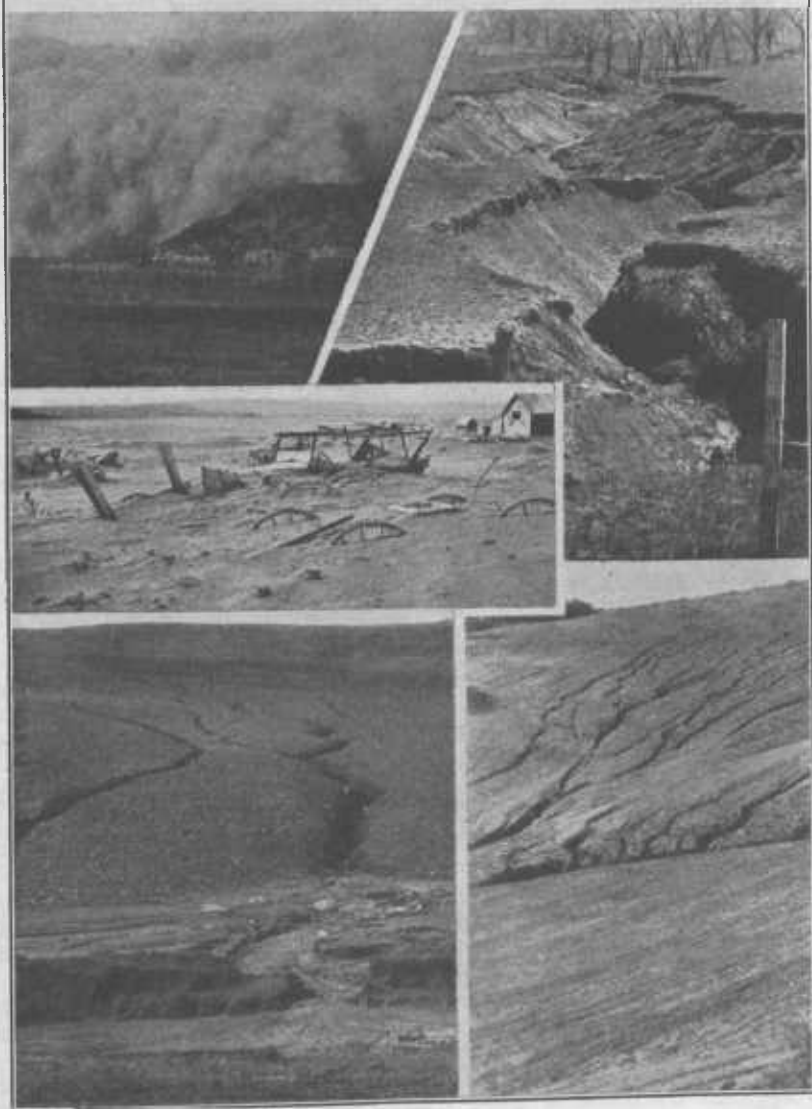
The Poor Land Areas.

Besides making these changes in farming practices, which are necessary in order to save our soil resources, we need to shift large farming areas almost completely to other uses, such as ranching or forestry. Such areas are scattered through much of the Appalachian Highlands, the Ozarks, the Great Plains wheat area, the Pacific coast foothills, and the cut-over regions of the Great Lakes, the Gulf, and the Pacific coast. Within these areas are about 600,000 farms, covering more than 100 million acres—but only 25 million acres of extremely poor cropland—for which this type of adjustment is recommended.

Retirement of such a large acreage of cropland would have to be slow—very slow. It wouldn't cut total production much in the next few years. Most of this land is far below average in productivity, anyway.

Taking these low-producing acres out of cultivation brings up the problem of what the people who now live there are to do. In the decade before the depression, good opportunities for work in the cities drew off many people from these areas. But during the depression the process was reversed. The heaviest back-to-the-land movement was to the poor-land areas.

WATER AND WIND WREAK THEIR HAVOC
ON AMERICA'S FARMS



If opportunities for work in the cities should again become plentiful, the removal of these poor lands from cultivation would be easier. Without expanding industrial opportunities, it would mean a greater concentration of farm population on the superior farm land of the country. Such a concentration would partly offset the trend toward larger farms and more use of mechanical equipment.

We have estimated that we have 15 or 20 million acres of farm land under the plow which we don't need under present demand conditions. On the basis of this estimate, about 30 to 40 million acres of cropland can be shifted from soil-depleting to soil-conserving crops and still leave plenty of margin for domestic consumption and exports, since an acre of hay will produce about half as much food as an acre of corn or wheat. Thus a shift of 20 to 30 million acres (needed from the standpoint of soil conservation) would not cut production below prospective requirements.

We have studied the size of the farm plant with relation to our domestic and foreign needs, and we have also looked at the condition of our farm land and the need for soil conservation.

With all this in mind, let's look at our farm plant in relation to the yardstick of farm income.

4. The Yardstick of Farm Income

In using the yardstick of farm income, we are doing on a large scale exactly the same thing each farmer does when he plans his own farm operations. He arranges his cropping and livestock program to achieve what he believes will bring him in the most possible income, in view of the outlook for the different commodities. Think of this country as one huge farm, growing cotton, tobacco, rice, corn, potatoes, wheat, hay, and many other products. Our job is to arrive at the most profitable combination of crops and livestock—to determine how much of each we want to produce. Remember, in this section income is our sole yardstick.

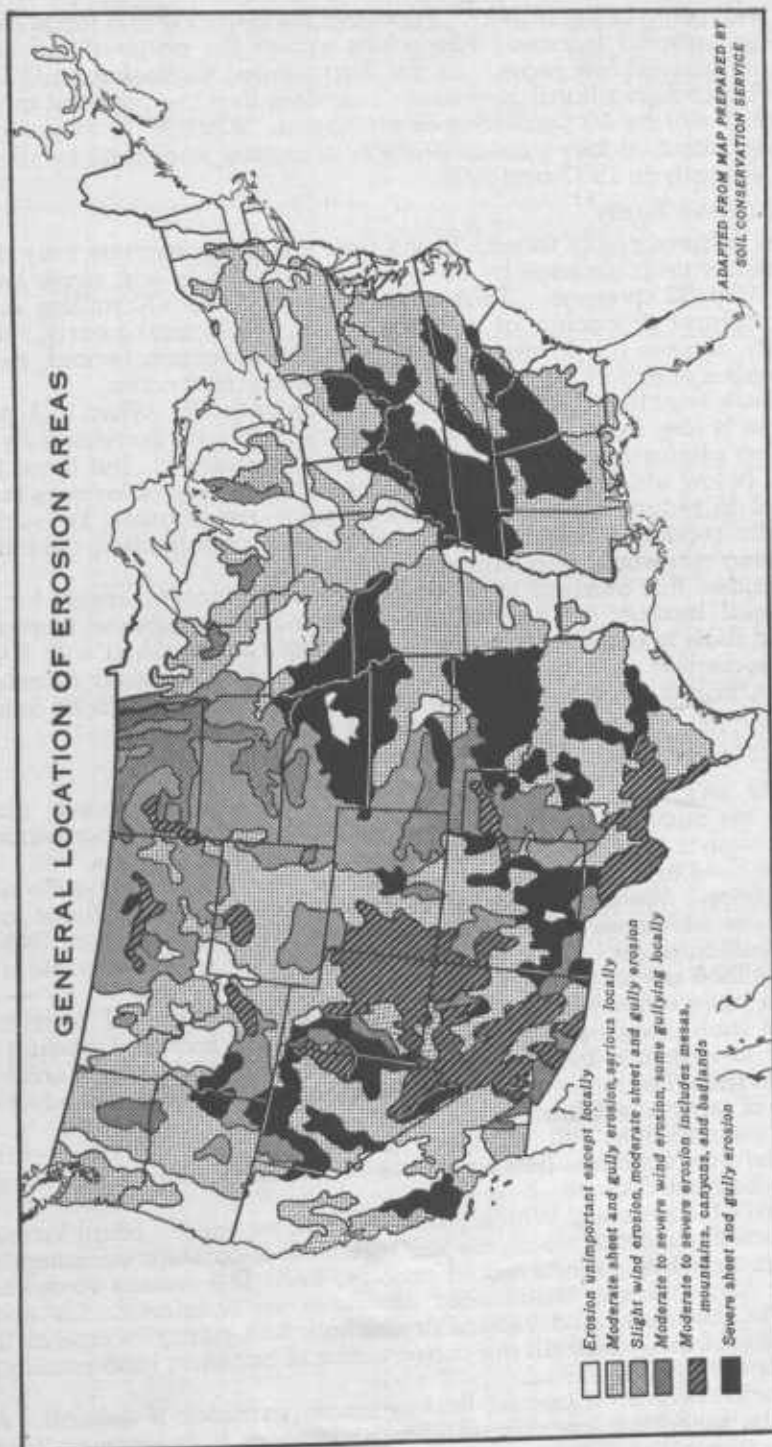
Ready-Made Yardstick.

We had to make our own yardsticks of domestic consumption, foreign demand, and soil conservation. But in the Soil Conservation and Domestic Allotment Act, Congress has given us a ready-made yardstick called "parity" income. Parity income is defined as a per-capita purchasing power of farm income having the same ratio to purchasing power of nonfarm income as it had in the 1910 to 1914 period. In other words, parity is the relationship between farm and nonfarm well-being which existed in pre-war days. Not in dollars, but in actual amounts of food, clothing, furniture, movies, automobiles, etc. Present methods of computing parity may not be perfect, and an attempt is being made to refine them. But at least we have a rough measure that we can use in the meantime.

All right. There's the yardstick. How close to parity income are we now, and how close would we be likely to get in the next few years with no change in crop acreage.

Farm income in 1935 and 1936 was slightly below parity, as near as we can measure it, even after benefit payments were added. Which is to say that the ratio of per-capita farm income to per-capita nonfarm income was lower in those years than in the 1910-14 period.

Every farmer knows that the well-being of agriculture is closely tied to the well-being of manufacturing, trade, mining, transportation—



the well-being of the Nation. Farm income depends to a large extent on the national income. Economists expect the national income to rise in the next few years. In the Agricultural Outlook for 1937, the Bureau of Agricultural Economics estimates that the national income in 1937 will be 10 percent greater than in 1936. If crop acreages stayed about as they were in 1936, farm income would still be slightly below parity in 1937 and 1938.

To Achieve Parity.

To achieve parity income in the next few years farmers may need to reduce crop acreage by as much as 45 to 55 million acres below the 1928-32 average. That is, as few as 310 to 320 million acres of cropland producing at average yields would most nearly return parity income to farmers. The greatest reduction would be in acreages of export crops, mainly wheat, corn, and cotton.

Do we want to reduce production as much as that? When industrial output is low, farm income can almost certainly be increased by reducing production. We know that from experience. But there is a level below which it is not to the interest of society or of farmers themselves to reduce farm output. Sharp price rises caused by such a drastic reduction might result in decreased consumption, which in the long run would hurt farmers.

Besides, this analysis is based only on short-time prospects for the national income. It has to be. If the national income increases faster than is expected, parity income might be reached with much less reduction in crop acreage. And if foreign demand increases faster than is expected, the reduction required would also be less.

Here's the Problem

Now let's see what we have. The table on the opposite page gives the number of acres of various important crops and corresponding livestock numbers needed to achieve certain objectives.

We need about 305 million acres for food and fiber during the next few years. We can use from 40 to 45 million acres for those farm products which we sell to other countries. That's a total of 345 to 350 million acres. To meet those requirements we have a plant of 365 million acres.

We have estimated that 20 to 30 million acres should be shifted out of such crops as corn, wheat, and cotton to hay and pasture in order to maintain the fertility of our farm land and control erosion. A start should be made on the job of taking completely out of production some of our poorest farm land.

If we consider still another yardstick in our planning—farm income—we conclude that as few as 310 to 320 million acres should be in harvested crops.

Here's the problem: Which yardstick shall we take? Shall farmers produce the quantity which the 1920-29 level of domestic consumption and prospective exports would require, even if it means somewhat lower farm income than might otherwise be obtained? Or shall they, on the other hand, reduce production, with parity income as the only objective? Or shall the conservation of our farm land resources be our only yardstick?

Your answer is, of course, that no single yardstick is enough. All must be taken into consideration in arriving at a decision on farm-production policy.

Yardsticks of agricultural adjustment

Item	Production		Acreage of number required, 1936-40, for—				Parity income
	1936	Size of the farm plant 1928-32	Domestic consumption (1920-29 level)	Exports (1930-34 average)	Soil conservation		
					Regional adjustment project recommendation	County planning project recommendation	
	Millions	Millions	Millions	Millions	Millions	Millions	Millions
Corn.....acres	98.5	103.3	140.5	4.9	86.5	94.0	83.0 - 87.0
Oats and barley.....do	46.1	52.7	45.0	3.4	49.4	46.2	44.0 - 46.0
Wheat.....do	51.1	60.1	45.0	5.9	51.7	57.9	43.5 - 46.5
Cotton ¹do	29.7	40.5	16.9	19.6	38.4	31.9	32.0 - 35.0
All hay.....do	67.9	67.6	69.4	2.4	81.4	88.0	63.0 - 65.0
Burley tobacco ¹do	.31	.43	.35	.02	.43	.34	.40 - .43
Flue-cured tobacco ¹do	.88	.99	.27	.46	1.00	.86	.86 - .92
Potatoes.....do	3.22	3.33	3.67				3.00 - 3.20
Fruit crops.....do		6.85	7.65	.36			
Truck crops.....do		3.25	3.25				
Soil-depleting crops.....do		296.5	235.0	40.9	272.0	278.0	240.0 - 250.0
All harvested crops.....do		366.5	305.0	43.3	355.0	360.0	310.0 - 320.0
Cows milked ²number	23.5	23.2	23.9		24.0	26.2	23.2 - 23.8
Beef-cattle slaughter.....do	15.2	12.0	15.4		13.4	14.7	12.5 - 13.0
Hog slaughter:							
For pork.....do			71.8	1.7	58.2	57.7	52.5 - 57.5
For lard.....do	55.0	70.0	51.6	17.1	21.2	20.5	20.0 - 21.0
Lamb slaughter.....do	21.0	19.8	17.7		2,966	2,866	2,666 - 2,750
Eggs produced.....dozen	2,566	2,750	2,666				

¹ Cotton and tobacco computed on basis of 1932-36 average yields.² Milk production computed on basis of 1923-32 average production per cow.

